REMARKS

Claims 1-47 are pending. Claims 13 and 16-47 are rejected. Claims 1-12, 14, and 15 are withdrawn from consideration.

Applicant thanks the Examiner for the courtesies extended to Applicant's representative during the telephone interview conducted on July 21, 2008. The substance of the interview is reflected in the remarks below.

Claims 13 and 16-47 remain rejected under 35 USC 103(a) as being unpatentable over Belotserkovsky et al. (U.S. Patent No. 6,621,857; hereinafter "Belotserkovsky") in view of Frank et al. (U.S. Patent No. 6,731,622; hereinafter "Frank") and Schuster et al. (U.S. Patent No. 6,591,355; hereinafter "Schuster").

Independent claim 13 recites "A time-sliced processor … comprising: a data cache configured to receive input data and to cache intermediate data *at chip or sub-chip resolution* ..." Claim 13 also recites that each of a plurality of signal processing elements has "a cache configured to receive data from the data cache and to cache intermediate data *at chip or sub-chip resolution*."

Schuster is directed generally to a method for controlling and managing Distributed Shared Memory (DSM). As stated in column 1, lines 24-27, "the DSM is typically implemented as a middleware layer, between the operating system and user applications running on host processors that are linked by a local area network (LAN)." Further, Schuster discusses in column 1, lines 31-32, controlling access to the shared memory by different applications running on the different processors (or hosts). Schuster does not cache at chip or sub-chip resolution, as required by independent claim 13.

Cai is directed a cache memory 100 having cache module 102, 104, 106. See Figure 1. However, Cai, like Schuster, does not disclose caching at chip or sub-chip resolution.

Belotserkovsky and Frank fail to make up for Schuster's and Cai's deficiency.

During the telephone conference Applicant realized that the Examiner was interpreting the term "chip" incorrectly. "Chip" has a standard meaning in the telecommunications art. Wikipedia defines a "chip" as "one symbol (data) or pulse of a direct-sequence spread spectrum code, such as a pseudo-noise code sequence used in a CDMA system." Similarly, Andrew J. Viterbi, CDMA Principles of Spread Spectrum Communication, on page 23, defines "chip" as "the signal corresponding to an individual term of [a] random sequence." Copies of the relevant pages of these sources are attached for the Examiner's reference. Therefore, caching at the "chip or sub-chip resolution" means the cache occurs at a resolution equal to or less than the pulse of the spread spectrum code. "Chip" does not mean semiconductor chip, as initially thought by the Examiner. Despite the fact that the invention involves communication systems given the term "chip" as explained above, it would not make sense for caching to take place at a semiconductor chip or sub-semiconductor chip resolution.

Again, none of the references suggests caching at chip or sub-chip resolution.

Thus, independent claim 13, along with their dependent claims, is patentable over the applied references for at least these reasons.

Independent claim 28, similar to claim 13 discussed above, recites "A master control unit in a time-sliced processor ... wherein the master control unit is configured ... to control the data cache to cache *at chip or sub-chip resolution*." Thus, independent claim 28, along with their dependent claims, is patentable over the applied references for at least the same reasons as discussed above with respect to claim 13.

Independent claim 37, also similar to claim 13 discussed above, recites "A time-sliced processor ... comprising ... a data cache for receiving input data and for caching intermediate data *at chip or sub-chip resolution*." Claim 37 also recites that each of a plurality of signal processing means has "a cache for receiving data from the data cache and for caching intermediate data *at chip or sub-chip resolution*." Thus, independent claim 37, along with their dependent claims, is

patentable over the applied references for at least the same reasons as discussed above with respect to claim 13.

Reconsideration and withdrawal of the prior art rejection is therefore respectfully requested.

In view of the above, Applicant believes the pending application is in condition for allowance.

In the event a fee is required or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 50-2215.

Dated: July 25, 2008

Respectfully submitted,

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Chip (CDMA)

From Wikipedia, the free encyclopedia

A **chip** is one symbol (data) or pulse of a direct-sequence spread spectrum code, such as a pseudo-noise code sequence used in a CDMA system. One chip is representing several bits.

The chip rate of a code is a is the number of pulses per second (chips per second) at which the code is transmitted (or received). The chip rate is a symbol rate (also known as baud rate or modulation rate) that is larger than the bit rate.

Frequency-division and time-division techniques are supplanted in some modern systems by code-division techniques, including CDMA.

What is CDMA?

CDMA is one kind of spread-spectrum modulation system.

CDMA mobile phone systems

CDMA is in use as one standard for mobile phone systems. This application was pioneered by Qualcomm.

External links

- CDMA basics (http://www.umtsworld.com/technology/cdmabasics.htm)

Retrieved from "http://en.wikipedia.org/wiki/Chip_%28CDMA%29"
Categories: Wireless stubs

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CDMA

Principles of Spread Spectrum Communication

Andrew J. Viterbi

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2.3 Generating Pseudorandom Signals (Pseudonoise) from Pseudorandom Sequences

At the end of the last section, we suggested mapping from binary logical symbols, 0 and 1, to real values $+1$ and -1. We now combine this with physical waveforms, creating the rudimentary spread spectrum digital communication system shown in Figure 2.2. Random binary numbers are turned into a noiselike waveform by modulating a periodic impulse stream of period T_c, which is the clock period of the (pseudo) random sequence generator. T_c is also called the *chip duration,* where chip refers to the signal corresponding to an individual term of the random sequence. The signal energy for each chip is designated E_c. The sign is established (modulated) by the binary random sequence value ($+1$ or -1) multiplied by the value of the binary data during the period T_c (with 0 or 1 also mapped to $+1$ or -1). The data sequence (bit or symbol) duration is typically a multiple of the chip duration, so the chip sequence value $x_n(k)$ will typically remain constant over several chips (values of n). For now, we will take the data sequence to be uncoded. However, this model also applies to a system employing error-correcting coding redundancy, in which case $x_n(k)$ is the value (± 1) during a chip duration T_c (which remains constant over all the chips within the code symbol duration). The index k is used to indicate that the modulator and signal generator pertain to the kth user of the multiple access system.

The impulse modulator is, of course, a fictitious construction. It provides a convenient linear model of the waveform generating process. In Figure 2.3, we examine the second-order statistics of the impulse train randomly modulated by $+1$ and -1 values of the product of the data and random sequence. Impulses (Dirac delta functions) are nonphysical and represent the limit of a very narrow, very tall pulse, as the pulse width Δ approaches zero and its amplitude $\sqrt{E_c}/\Delta$ approaches infinity. We show the nonzero Δ case in Figure 2.3b. From this and properties R-1 and R-3 of the last section, we obtain the correlation function $R(\tau)$ for the nonzero Δ case in Figure 2.3c. Finally, letting $\Delta \rightarrow 0$, we obtain the correlation function of the impulse train in Figure 2.3d. This is itself a single impulse or Dirac delta function of area E_c/T_c at $\tau = 0$, which is equivalent to *white* noise of two-sided density E_c/T_c watts/Hz.[2] Hence, the term *pseudonoise*

[2] In order to justify that the process is stationary, we must take the initial time to be a random variable, uniformly distributed over the interval $(0, T_c)$.